MAINE & THE MARITIMES

Waterfowl Breeding Population Survey

2002

CANADIAN WILDLIFE SERVICE

TITLE: Waterfowl Breeding Population Survey for Maine and the Maritimes

STRATA SURVEYED: 62, 63, 64, 65, 66 and 67

DATES: May 1 through June 4, 2002

DATA SUPPLIED BY: United States Fish and Wildlife Service (USFWS)
Canadian Wildlife Service (CWS)

Aerial Crew:
Pilot/Observer: John Bidwell, Flyway Biologist, USFWS
Observer: Marty Drut, Wildlife Biologist, USFWS

ABSTRACT

The 2002 waterfowl breeding population survey of Maine and the Maritimes was conducted from May 1 through June 4. All transects and segments were flown and comparisons made with the historical data set, which includes estimates from 1996 through 2001. This was the third operational year for the survey.

Temperatures were generally milder and precipitation about normal for the winter of 2001-02. For Stratum 62 through 65, precipitation was above normal in March and April and spring was early with above normal temperatures. Stratum 66 and 67, however, had a late cool spring, which delayed migration and could severely reduce production in Labrador. Record indices were observed for black ducks, green-winged teal, pintails, scoters and mergansers.

Species	2002 estimates in thousands	% change from 2001	% change from 1996-2001 mean
Mallard	16.2	57.7	-40.0
American black duck	324.0	77.4	40.3
American wigeon	40.4	-32.1	131.5
American green-winged teal	501.9	244.1	247.4
Northern pintail	40.3	183.5	451.2
Ring-necked duck	120.6	-5.7	-29.6
Goldeneye	138.7	-7.3	38.2
Bufflehead	14.7	-42.0	15.8
Scoters	47.7	312.8	81.2
Mergansers	113.1	151.8	44.9
Total Ducks	**1441.4**	**79.8**	**56.2**
Canada goose	220.0	41.1	3.3
NAP Canada goose TIB (Strata 66 and 67)	192.6	49.0	7.2
NAP Canada goose TIP (Strata 66 and 67)	62.0	7.3	-13.5

The Canada goose index also showed a significant increases over 2001 data. Survey estimates for selected species, total ducks and NAP Canada geese, are listed on the previous page.

METHODS

Methods for conducting this survey are described in the Standard Operating Procedures for Aerial Waterfowl Breeding Ground Population and Habitat Surveys in North America, Section III, revised 1987. Waterfowl data was collected using Hodges (2002) Voice/GPS (record and transcribe) survey system designed to georeference each observation. Transcribed raw data was error checked and compiled for transmission to the Population and Habitat Assessment Section (PHAS) of the United States Fish and Wildlife Service (USFWS), Division of Migratory Bird Management (DMBM).

This year's data was adjusted with pooled visibility correction factors for Strata 62 and 63 through 67. This is the third operational survey for Strata 62 through 67, however it must be noted that comparisons are made with a minimum of historical data. Stratum 62 has a data set from 1995-2002 while Strata 63-67 have data sets from 1996-2002. A discussion of North Atlantic Population (NAP) Canada geese is included with Total Indicated Pairs (TIP) and Total Indicated Birds (TIB) listed in Table 5.

Crew leader John Bidwell, Biologist/Pilot and observer Marty Drut, Wildlife Biologist worked together for a third consecutive year. Because of increased interest and concern over American black duck and NAP Canada goose populations, DMBM has made a commitment to maintain the same aerial crew for at least another five years. Consequently, statistical analysis of population data will improve with each future survey.

A Partenavia (P68C-TC) aircraft (N766) was used for this survey, which began May 1 and continued through June 4. Nineteen days and 95 flight hours were needed to complete all 331 segments as shown in Table 2 (Current Year Design). Weather delays were encountered in Nova Scotia (Stratum 64) and Newfoundland (Stratum 66), as well as in Labrador (Stratum 67) because of the extremely late spring. Traditionally, the survey is flown from Maine (Stratum 62) through New Brunswick (Stratum 63) then northeast to Labrador. Within each stratum, transects are flown from south to north except in Nova Scotia and Prince Edward Island (Stratum 65). Stratum 65 only contains 6 segments and is normally flown, in one day, from north to south. Once in Halifax (central Nova Scotia), transects for Stratum 64 are flown, first south to Yarmouth, and then north to Sydney. It should be noted that the final decision on survey design is based on duck phenology, weather and flight safety factors.

WEATHER AND HABITAT

Two simple words classify the winter of 2001/02 in the southern part of the survey area, warm and dry. Maine and New Brunswick experienced severe drought conditions. The annual precipitation for Maine in 2001 was almost 29 inches, which is about 13 inches below the 107-year average of 42.7 inches. Temperatures in the region averaged 7 degrees Fahrenheit warmer than normal. Consequently, by May 1 the snow pack was melted and lakes thawed except at

higher elevations. Precipitation for February through April was above normal. A storm in mid March dumped as much as 2 inches of rain in parts of New Brunswick. The rain and snow likely didn't do much to rebuild underground water supplies, but helped fill streams, lakes and wetlands depleted by the 2001 drought. Spring phenology was early to normal and timing of the survey was good for these strata.

The Atlantic provinces of Prince Edward Island, Nova Scotia, Newfoundland and Labrador didn't experience extreme drought conditions in 2001/02, probably because of the maritime influence. Newfoundland had significant snowfall, but nothing like the records set in 2000/01. Spring phenology was early in Prince Edward Island and Nova Scotia and survey timing was good. Newfoundland's spring was delayed by about two weeks, however, moderating temperatures from the middle to the end of May, with lots of sunlight and wind, helped thaw most ponds and lakes, even at the highest elevations. Consequently, survey timing in Newfoundland appeared, also, to be good for all species.

Labrador was an entirely different story. Snowfall and temperatures were fairly normal in Labrador this winter; however, spring was delayed by at least three weeks. During the month of May, Labrador experienced extended periods of cold (below normal) temperatures and heavy snowfall. Spring phenology appeared to be progressing from west to east and from the higher (above 2000 feet) to the lower elevations. Thick ice was noticed on all lakes above 2000 feet with little edge thawing. Any birds were concentrated at the outflows from these lakes and associated rivers. Wetlands at the lower elevations were open and consequently attracted large concentrations of ducks and geese. Mostly pairs and singles in black ducks, green-winged teal, merganser and Canada geese were observed, however at the northern latitude transects birds were definitely stacked. Large concentrations of surf scoters and northern pintails were noticed throughout Stratum 67. Habitat conditions were classified as poor in Labrador, even with the record counts. The birds probably didn't disperse because of the late phenology and competition for available habitat was probably intense. Additionally, early nests may have been flooded and destroyed as the thaw continued into June.

BREEDING POPULATION ESTIMATES

Strata and species in Table 1 list data for the 2002 breeding waterfowl population and the long-term population estimates can be found in Appendix 1. The overall duck population estimate for 2002 is 1,441,400, which is (+79.8%) above the 2001 index and (+56.2%) above the long term (1996-2001) mean. American black ducks are up (+77.4%) from 2001 to a survey record index of 324,000 and also up (+40.3%) from the long term mean. Two dabbler species increased in 2002. American green-winged teal set a survey record at 501,900, which is (+244.1%) above 2001 and (+247.4%) above the long term mean. Northern pintail also showed a significant increase of (+183.5%) over 2001 and (+451.2%) over the long term mean. In the diving duck category, Ring-necked duck showed a slight decline (-5.7%) over 2001 to an index of 120,600. This is also a (-29.6%) decrease below the long-term mean. Goldeneye and Bufflehead both showed decreases over the 2001 index, but continue to be above the long term mean. In the miscellaneous category, Scoters significantly increased (+312.8%) over the 2001 index and (+81.2%) above the long term mean. Mergansers were also up (+151.8%) over the

2001 index and (+44.9%) over the long term mean. Figure 1 shows population indices for individual waterfowl species on an annual basis and can be found at the end of this report.

The North Atlantic Population (NAP) Canada geese breed in western Greenland, Labrador, Newfoundland and eastern Quebec and over-winter in southern Atlantic Canada and New England. Tables 3 and 4 present raw and expanded data for NAP Canada geese in Stratum 66 (Newfoundland) and Stratum 67 (Labrador) respectively. Table 5 summarizes and combines these data sets and shows that the Total Indicated Pairs (TIP) index of 62,000 is (+7.3%) above the 2001 index, but is (-13.5%) below the 1996-2001 mean. Total Indicated Birds (TIB) rose to 192,600, which shows a (+49.0%) increase over 2001 and a (+7.2%) increase over the long-term mean.

CONCLUSIONS

Production is expected to be good to excellent in Strata 62 through 66. An early spring coupled with good to excellent water levels and a record total duck index should bring record production to the northeast. Labrador (Stratum 67) also showed increased indices in most species, however, the late phenology will likely result in very poor production. NAP geese numbers are increasing, however the Total Indicated Pairs (TIP) index is still below its long-term mean and goose production is expected to be poor in Labrador.

ACKNOWLDGEMENTS

I would like to thank Bruce Turner, Scott Gilliland, Keith Chaulk and Myrtle Bateman of the Canadian Wildlife Service (Atlantic Region) for assistance and advice during this survey. Also, thanks to all the DMBM staff who assisted me in preparation of this final report.

Submitted by: John Bidwell, Flyway Biologist July 15, 2002

Table 1. Status of waterfowl breeding population estimates (thousands, adjusted for visibility bias) by species and stratum.

	Stratum								% Change From		
Species/Ponds	62	63	64	65	66	67	2002 Total	2001 Total	1996-2001 Mean	2001	1996-2001 Mean
Ducks											
Dabblers											
Mallard	8.5	3.7	3.6	0.5	0.0	0.0	16.2	10.3	27.0	57.7%	-40.0%
Am. black duck	48.0	35.8	26.3	9.9	29.0	175.1	324.0	182.6	230.9	77.4%	40.3%
Gadwall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.8	-100.0%	-100.0%
Am. wigeon	16.6	22.3	0.0	0.0	1.5	0.0	40.4	59.5	17.5	-32.1%	131.5%
Am. green-winged teal	99.2	91.4	41.0	24.4	23.1	222.8	501.9	145.9	144.5	244.1%	247.4%
Blue-winged teal	0.0	2.2	0.0	0.0	0.0	0.0	2.2	0.0	8.1	--	-72.4%
N. shoveler	0.0	3.0	0.7	0.0	0.0	0.0	3.7	0.0	0.5	--	678.9%
N. pintail	5.1	1.7	0.0	0.0	0.7	32.7	40.3	14.2	7.3	183.5%	451.2%
Subtotal	177.4	160.2	71.5	34.8	54.3	430.6	928.7	415.5	436.5	123.5%	112.8%
Divers											
Redhead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
Canvasback	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
Scaups	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	4.5	--	-34.3%
Ring-necked duck	37.0	16.5	17.6	0.0	28.1	21.3	120.6	127.9	171.3	-5.7%	-29.6%
Goldeneyes	29.2	4.9	3.0	10.0	51.9	39.7	138.7	149.6	100.4	-7.3%	38.2%
Bufflehead	9.4	1.0	1.7	2.0	0.6	0.0	14.7	25.3	12.7	-42.0%	15.8%
Ruddy Duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	--	-100.0%
Subtotal	75.7	22.4	22.3	12.0	80.6	64.1	277.0	302.9	289.3	-8.6%	-4.3%
Miscellaneous											
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	--	-100.0%
Eiders	74.1	0.0	0.7	0.0	0.0	0.0	74.8	26.7	92.2	180.6%	-18.9%
Scoters	0.6	0.0	0.3	0.0	0.0	46.9	47.7	11.6	26.3	312.8%	81.2%
Mergansers	15.8	8.4	3.0	3.2	12.1	70.5	113.1	44.9	78.0	151.8%	44.9%
Subtotal	90.5	8.4	4.0	3.2	12.1	117.4	235.6	83.1	197.0	183.4%	19.6%
Total Ducks	343.5	191.0	97.8	49.9	147.1	612.0	1441.4	801.5	922.8	79.8%	56.2%
Canada Goose	10.0	11.9	4.6	0.9	78.3	114.3	220.0	155.9	212.9	41.1%	3.3%
Am. coot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--

Table 2. Survey design for Maine and the Maritimes, May 2002.

Survey Design	Stratum						Total
	62	63	64	65	66	67	
Square miles in stratum	32,202.7	27,874.5	21,179.6	2,225.21	42,248.4	84,608.8	210,339.21
Square miles in sample	333	256.5	216	27	319.5	337.5	1,489.5
Linear miles in sample	1,332	1,026	864	108	1,278	1,350	5,958
Number transects in sample	11	8	10	3	10	7	49
Number segments in sample	74	57	48	6	71	75	331
Expansion factor	96.705	108.673	98.054	82.415	132.233	250.693	141.215
Current Year Design							
Square miles in stratum	32,202.7	27,874.5	21,179.6	2,225.21	42,248.4	84,608.8	210,339.21
Square miles in sample	333	256.5	216	27	319.5	337.5	1,488.75
Linear miles in sample	1,332	1,026	864	108	1,278	1,350	5,955
Number transects in sample	11	8	10	3	10	7	49
Number segments in sample	74	57	48	6	71	75	331
Expansion factor	96.705	108.673	98.054	82.415	132.233	250.693	141.286

Table 3. North Atlantic Population Canada goose breeding survey data, stratum 66.

		Raw data							Expanded data				
Stratum	Year	Singles	Pairs	Open	TIP*	TIB**	Expansion factor	VCF***	Singles	Pairs	Open	TIP*	TIB**
66	1996	11	47	0	58	116	234.7111	2.73	7,048	30,116	0	37,164	74,328
66	1997	14	32	4	46	96	223.5344	2.73	8,543	19,528	2,441	28,071	58,584
66	1998	28	62	71	90	251	132.2316	2.73	10,108	22,382	25,630	32,489	90,609
66	1999	59	46	45	105	255	132.2316	2.73	21,299	16,606	16,245	37,904	92,053
66	2000	36	45	38	81	200	132.2316	2.73	12,996	16,245	13,718	29,240	72,198
66	2001	39	32	17	71	159	132.2316	2.73	14,079	11,552	6,137	25,630	57,398
66	2002	27	50	63	77	217	132.2316	2.73	9,747	18,050	22,743	27,796	78,335

* Total indicated pairs = S + P
** Total indicated birds = 2S + 2P + O
*** Visibility correction factor

Expanded data = (Raw data) x (Expansion factor) x VCF

Table 4. North Atlantic Population Canada goose breeding survey data, stratum 67.

		Raw data							Expanded data				
Stratum	Year	Singles	Pairs	Open	TIP*	TIB**	Expansion factor	VCF***	Singles	Pairs	Open	TIP*	TIB**
67	1996	12	50	37	62	161	368.6623	2.73	12,077	50,322	37,239	62,400	162,038
67	1997	22	29	30	51	132	261.1358	2.73	15,684	20,674	21,387	36,358	94,103
67	1998	19	11	52	30	112	261.1358	2.73	13,545	7,842	37,071	21,387	79,845
67	1999	45	41	6	86	178	250.6904	2.73	30,797	28,060	4,106	58,857	121,820
67	2000	13	29	67	42	151	250.6904	2.73	8,897	19,847	45,854	28,744	103,342
67	2001	20	27	11	47	105	250.6904	2.73	13,688	18,478	7,528	32,166	71,860
67	2002	14	36	67	50	167	250.6904	2.73	9,581	24,638	45,854	34,219	114,292

* Total indicated pairs = S + P
** Total indicated birds = 2S + 2P + O
*** Visibility correction factor

Expanded data = (Raw data) x (Expansion factor) x VCF

Table 5. North Atlantic Population Canada goose breeding survey data combined for Strata 66 (Newfoundland) and 67 (Labrador)

Stratum 66 (Newfoundland)

Year	Singles	Pairs	Grouped	TIP*	TIB**
1996	7,048	30,116	0	37,164	74,328
1997	8,543	19,528	2,441	28,071	58,584
1998	10,108	22,382	25,630	32,489	90,609
1999	21,299	16,606	16,245	37,904	92,053
2000	12,996	16,245	13,718	29,240	72,198
2001	14,079	11,552	6,137	25,630	57,398
2002	9,747	18,050	22,743	27,796	78,335

Stratum 67 (Labrador)

Year	Singles	Pairs	Grouped	TIP*	TIB**
1996	12,077	50,322	37,239	62,400	162,038
1997	15,684	20,674	21,387	36,358	94,103
1998	13,545	7,842	37,071	21,387	79,845
1999	30,797	28,060	4,106	58,857	121,820
2000	8,897	19,847	45,854	28,744	103,342
2001	13,688	18,478	7,528	32,166	71,860
2002	9,581	24,638	45,854	34,219	114,292

Combined total, strata 66 and 67

Year	Singles	Pairs	Grouped	TIP*	TIB**
1996	19,126	80,438	37,239	99,564	236,366
1997	24,227	40,202	23,828	64,429	152,687
1998	23,653	30,223	62,701	53,876	170,454
1999	52,096	44,665	20,351	96,761	213,874
2000	21,893	36,092	59,571	57,985	175,541
2001	27,766	30,030	13,665	57,797	129,258
2002	19,328	42,687	68,596	62,016	192,628

* Total indicated pairs = Singles + Pairs

** Total indicated birds = 2 x Singles + 2 x Pairs + Grouped

Appendix 1. Long-term trend in adjusted waterfowl breeding population estimates (thousands).

Species/Ponds	1996	1997	1998	1999	2000	2001	2002
Ducks							
Dabblers							
Mallard	23.1	38.2	48.0	21.3	21.1	10.3	16.2
Am. black duck	178.2	261.4	288.7	216.8	257.8	182.6	324.0
Gadwall	0.0	0.8	0.8	0.0	0.0	3.0	0.0
Am. wigeon	3.2	2.7	9.2	3.7	26.4	59.5	40.4
Am. green-winged teal	149.4	90.0	170.0	175.2	136.5	145.9	501.9
Blue-winged teal	22.3	1.8	5.6	19.0	0.0	0.0	2.2
N. shoveler	0.7	0.0	0.0	0.0	2.1	0.0	3.7
N. pintail	9.1	2.2	1.7	10.2	6.5	14.2	40.3
Subtotal	386.0	397.0	524.0	446.2	450.5	415.5	928.7
Divers							
Redhead	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canvasback	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scaups	0.0	0.4	0.6	8.7	17.5	0.0	3.0
Ring-necked duck	175.4	246.7	132.4	128.7	216.7	127.9	120.6
Goldeneyes	31.2	45.3	83.3	236.3	56.6	149.6	138.7
Bufflehead	3.4	8.0	3.1	23.4	12.8	25.3	14.7
Ruddy Duck	0.0	0.0	0.0	2.3	0.0	0.0	0.0
Subtotal	210.0	300.4	219.5	399.4	303.7	302.9	277.0
Miscellaneous							
Oldsquaw	1.5	0.0	1.4	0.0	0.0	0.0	0.0
Eiders	172.9	95.4	168.3	0.0	89.8	26.7	74.8
Scoters	23.3	0.0	60.7	45.8	16.6	11.6	47.7
Mergansers	45.9	149.7	107.3	68.2	52.2	44.9	113.1
Subtotal	243.6	245.0	337.7	114.0	158.6	83.1	235.6
Total Ducks	839.6	942.4	1081.2	959.6	912.7	801.5	1441.4
Canada Goose	231.7	185.1	229.2	278.8	196.9	155.9	220.0
Am. coot	0.0	0.0	0.0	0.0	0.0	0.0	0.0

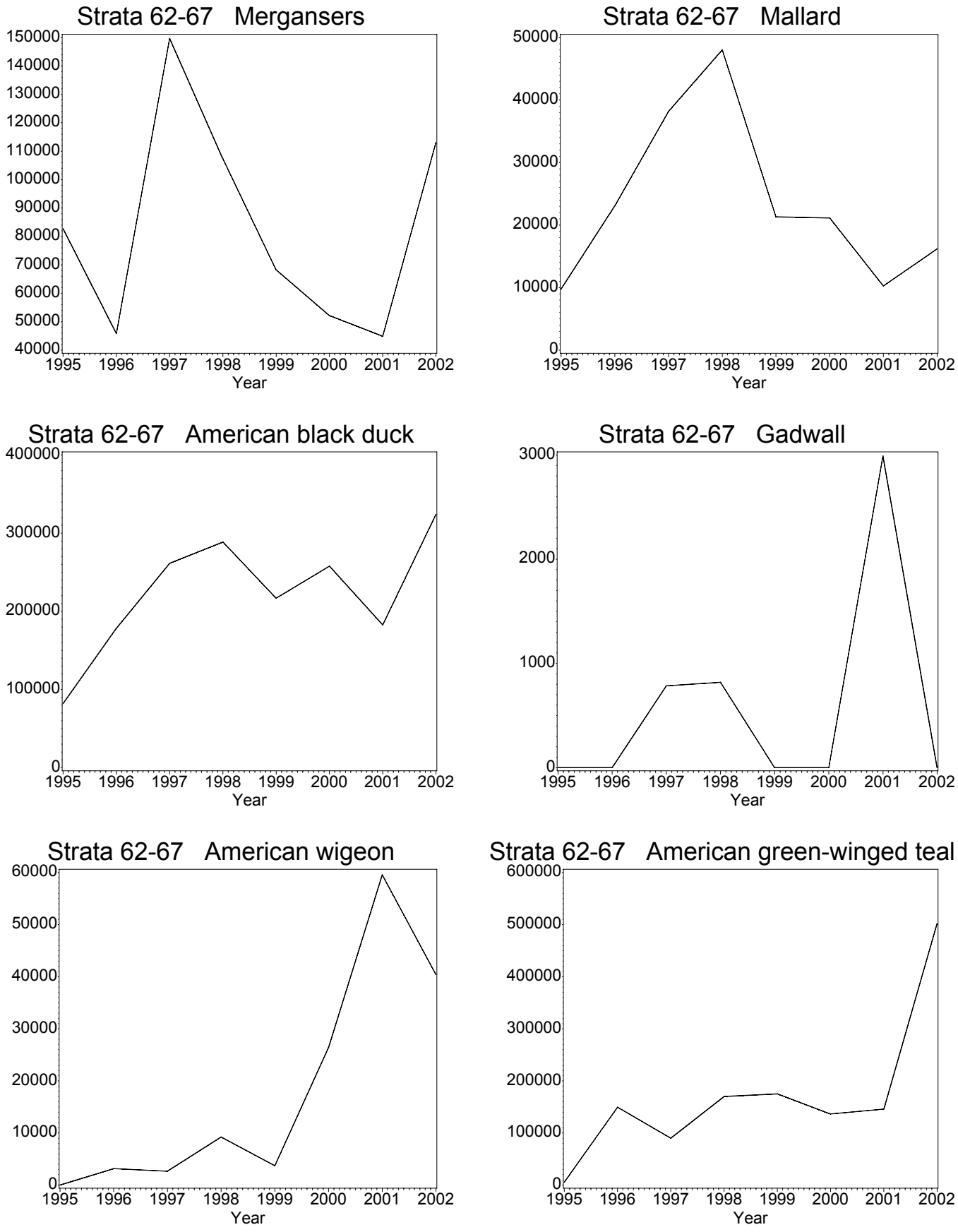
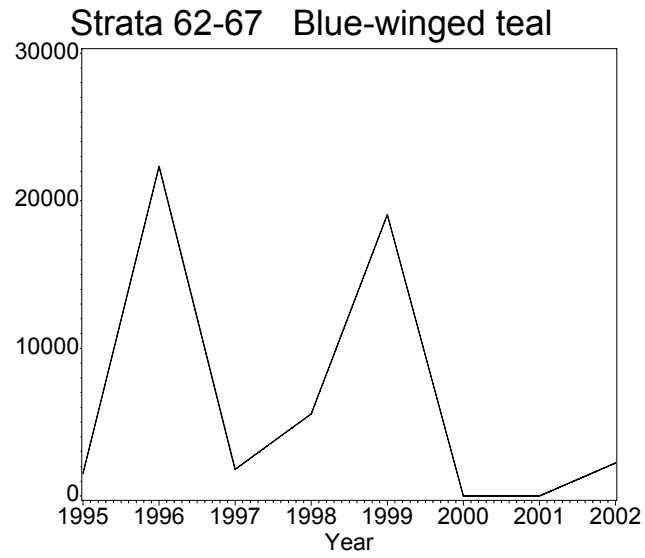
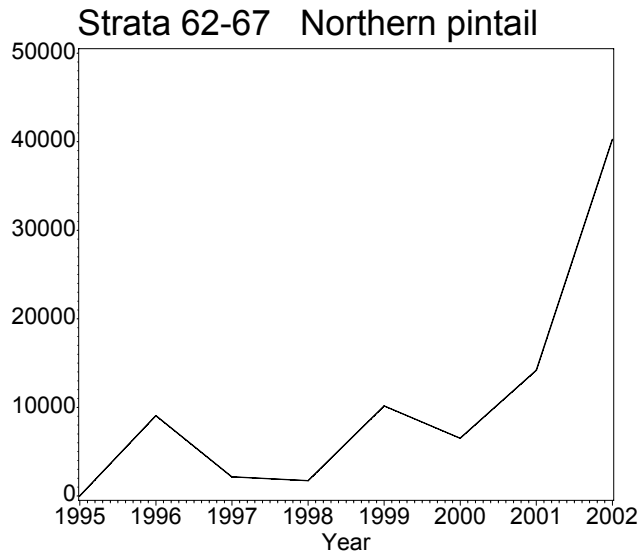
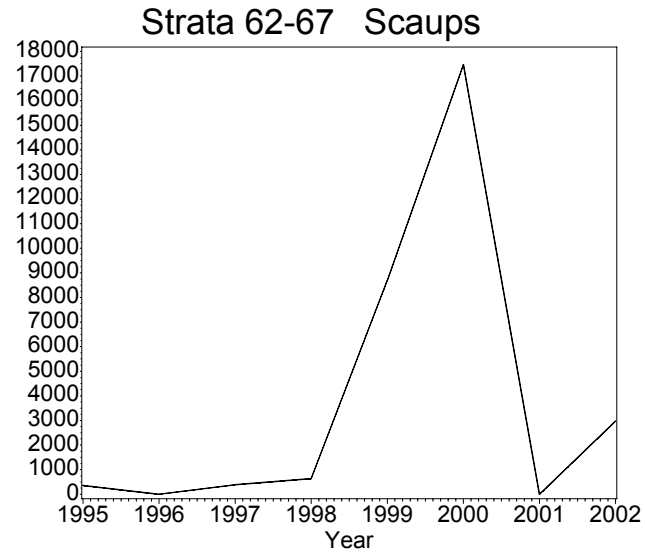
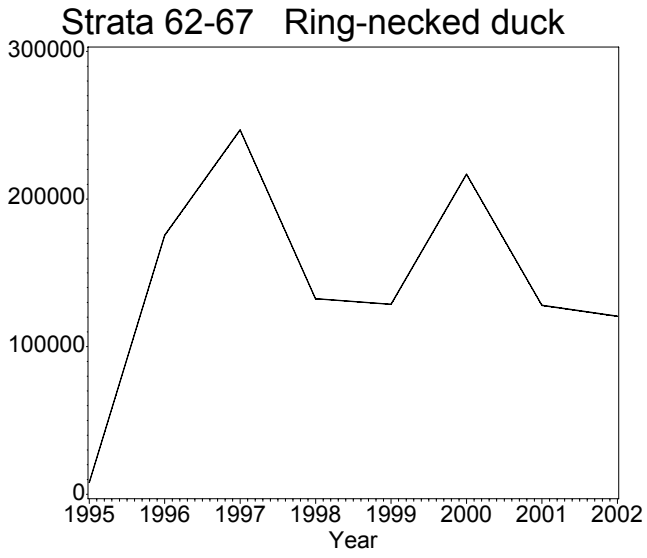


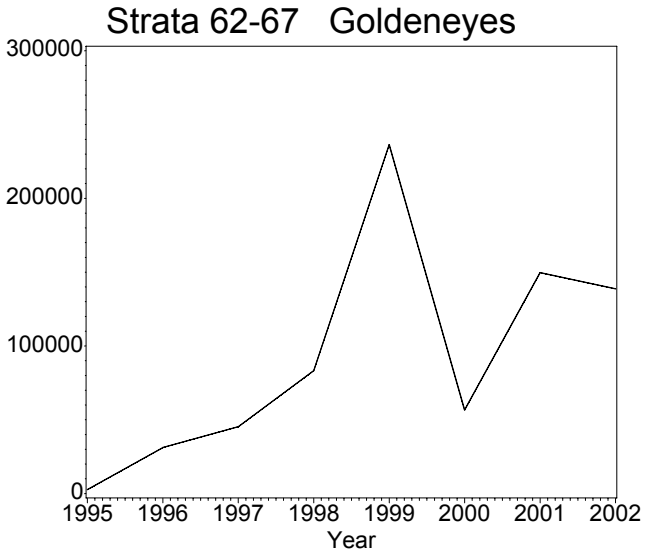
Figure 1. Population indices for the individual waterfowl species on an annual basis.

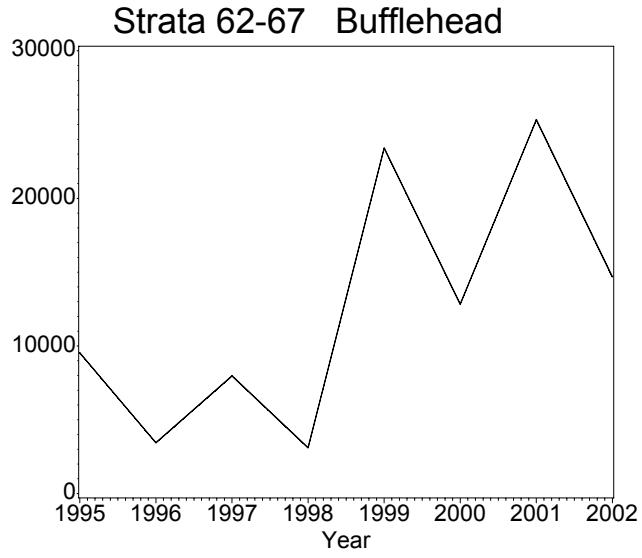












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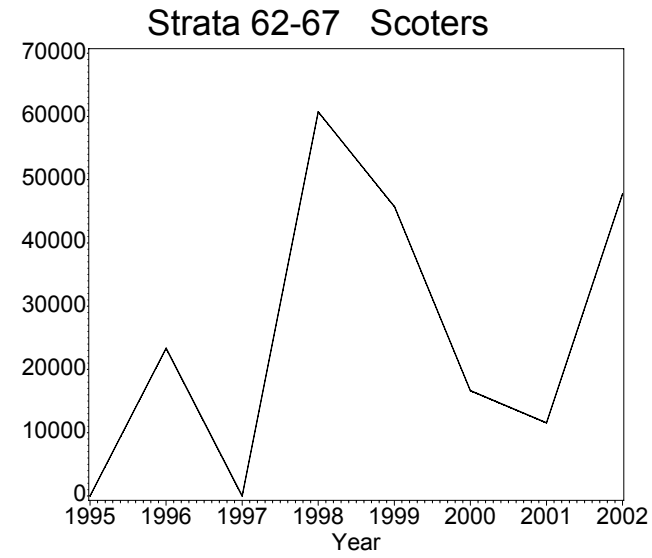

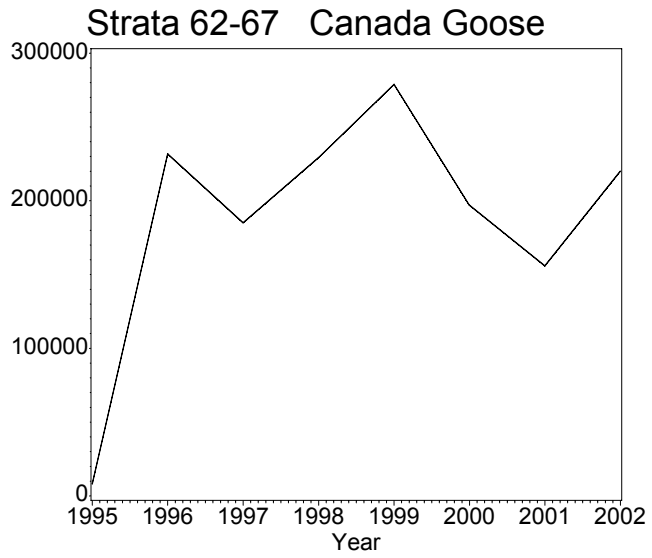

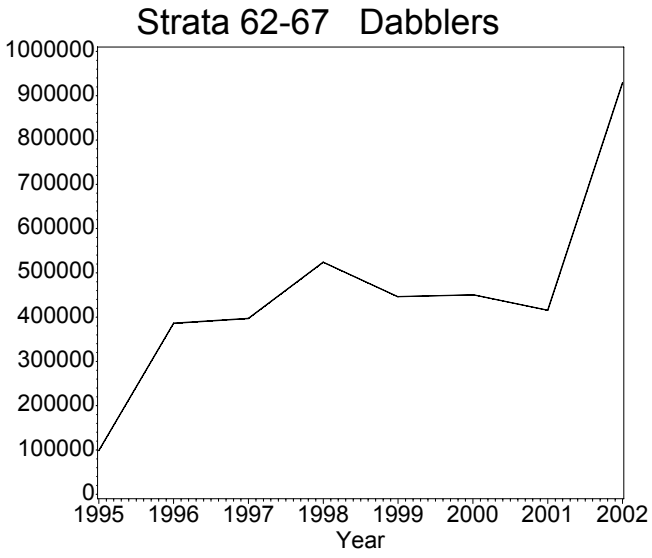

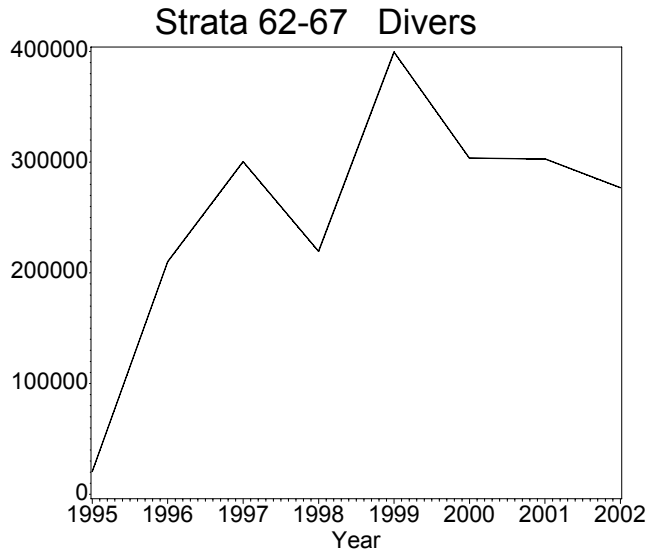

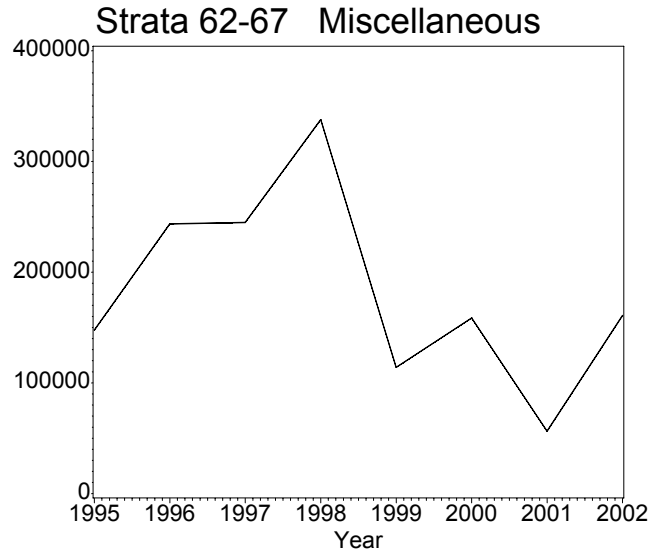

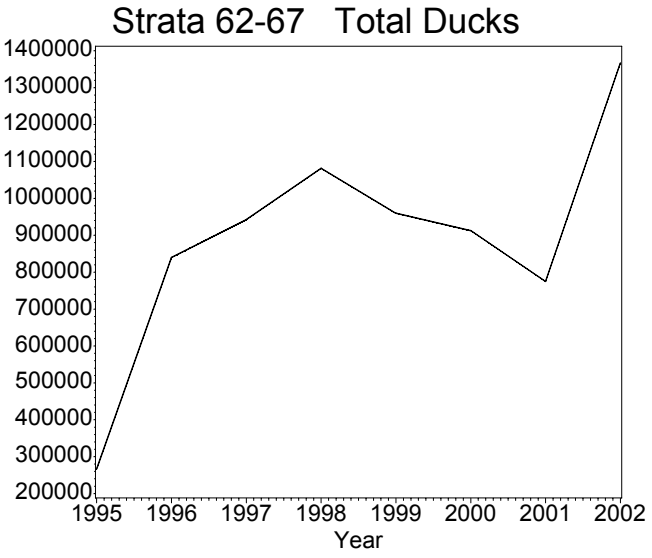

Figure 1 continued.